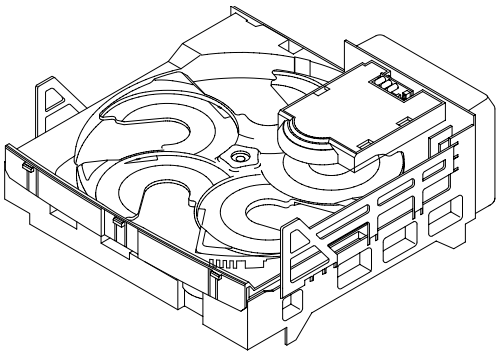
aiwa SERVICE

6ZG-1

English



SERVICE MANUAL

CD-R/RW MECHANISM

BASIC CD MECHANISM :3ZG-2 E2

TYPE
ZRDM
ZRNDM
YZRNDM
YZRNDCM

aiwa

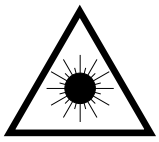
S/M Code No. 09-001-338-7N2

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynling laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvising, kan användaren utsättas för osynling laserstrålning, som överskrider gränsen för laserklass 1.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

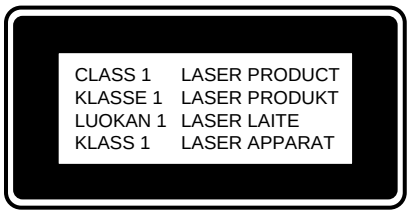
ATTENTION

L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydereer ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

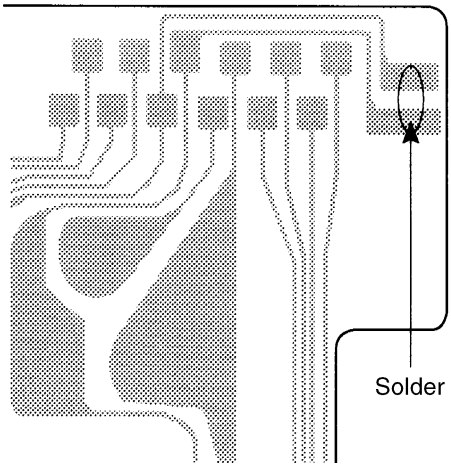


Precaution to replace Optical block (KSS-213F)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

1) After the connection, remove solder shown in the right figure.

PICK-UP Assy P.C.B



DISASSEMBLY INSTRUCTIONS

1. How to replace PICK UP.

1) Open the TRAY.
   Push the stopper to arrow direction and release half of the SHAFT SLED.
2) Turn GEAR MAIN CAM to the counterclockwise (arrow “a”) direction, and lift up CD mechanism. (Fig-1)
3) Remove SHAFT SLED.
4) CD mechanism in down position, replace PICK UP.
5) Lift up CD mechanism (Fig-1), and Reassemble the SHAFT SLED.

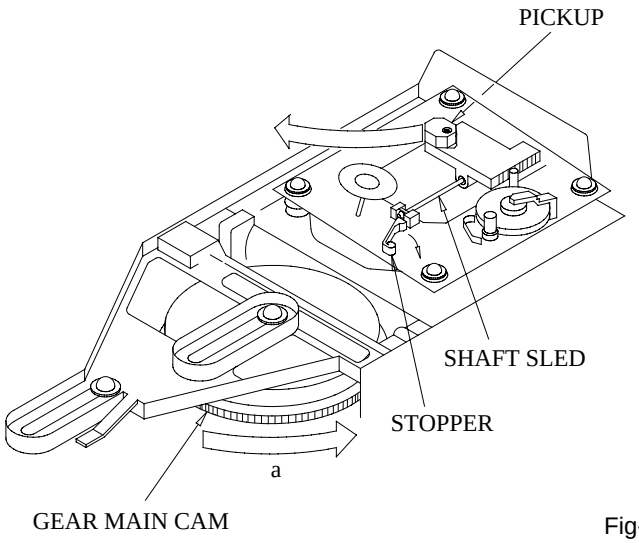
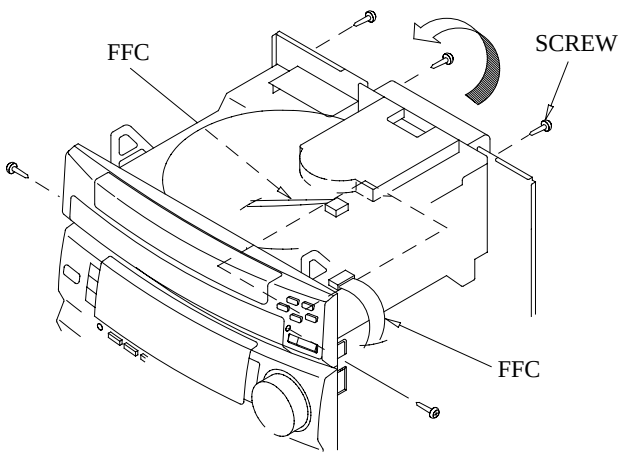


Fig-1

2. How to remove the 5CD CHANGER BLOCK (Fig-2)

1) Remove the two FFC of the CD circuit board, and remove the five SCREWS.
2) Lift 5 CD CHANGER BLOCK from behind, and remove it. (5CD CHANGER BLOCK can be removed even if PANEL TRAY is not removed.)



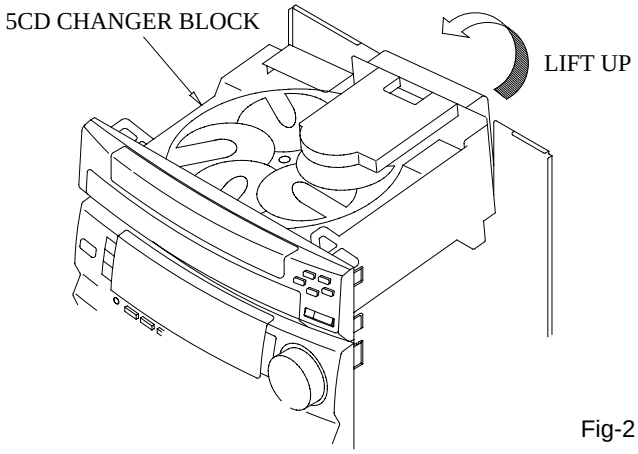
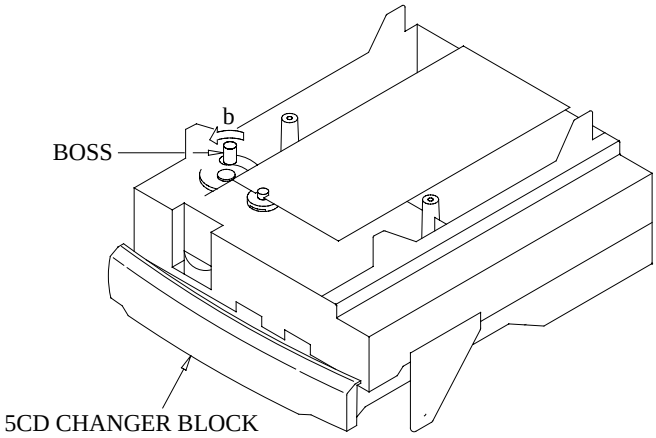


Fig-2

3. The disassemble and reassemble the TRAY

3-1. Disassembling procedure.

1) Push the PLATE GEAR'S Boss at the bottom part of CHAS MECHA strongly to the outside (arrow "b" direction). (Fig-3)
   (Confirm that TRAY appears a little in the front.)
2) Draw TRAY to the open position.
3) Remove FFC, and push the two LEVERS at both side of the CHAS MECH to remove TRAY. (Fig-4)



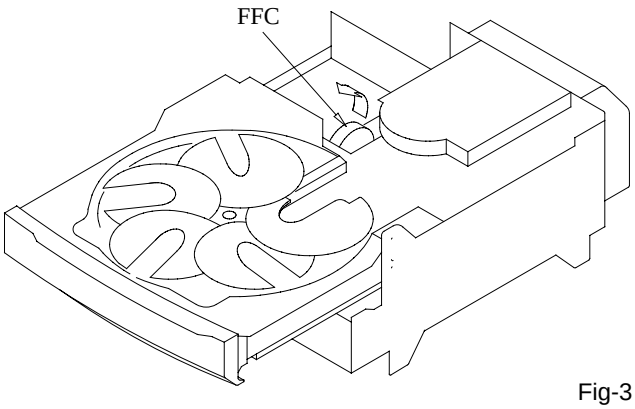


Fig-3

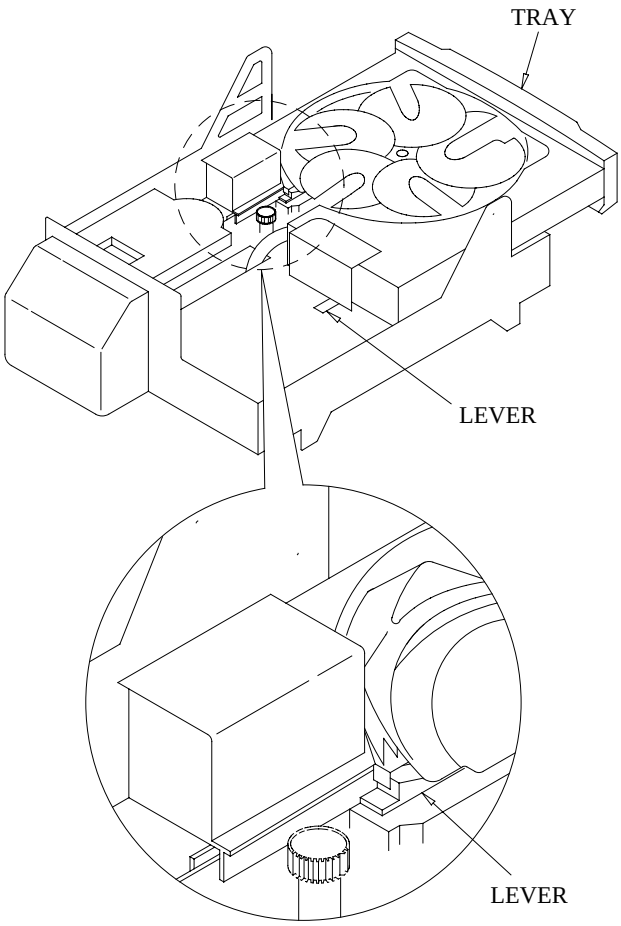


Fig-4

3-2. Reassembling procedure.

1) Confirm that LEVER TRAY is at the most right position and check for the CD Mechanism to be in the down position. (Fig-5)
2) Push in the TRAY along the rail of the CHAS MECHA.
3) After TRAY is half closed and FFC is put in, it can enter by force until the end of TRAY closed. (Fig-6)

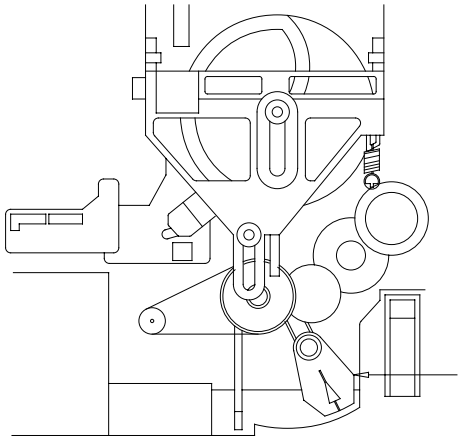


Fig-5

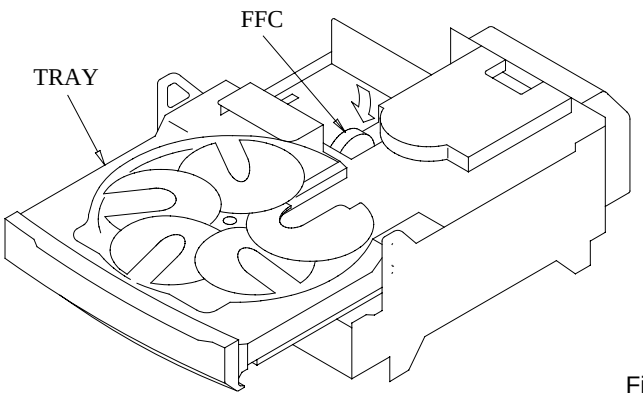


Fig-6

4. How to reassemble the TURN TABLE. (Fig-7)

1) Push LEVER TT in the direction of “C”, and put in the TURN TABLE 5CD. (Fig-7)
After reassembly, one of the TURN TABLE DISC TRAY (can be either one of the five disc trays) must be aligned with TURN TABLE 5CD. (Fig-8)
That is, having no gap difference between the TURN TABLE 5CD and the TRAY 5CD.

* When reassembling the TURN TABLE 5CD, it is acceptable facing any CD number (1-5).

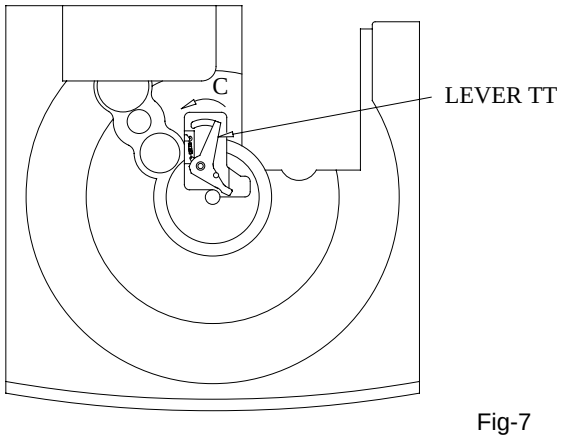


Fig-7

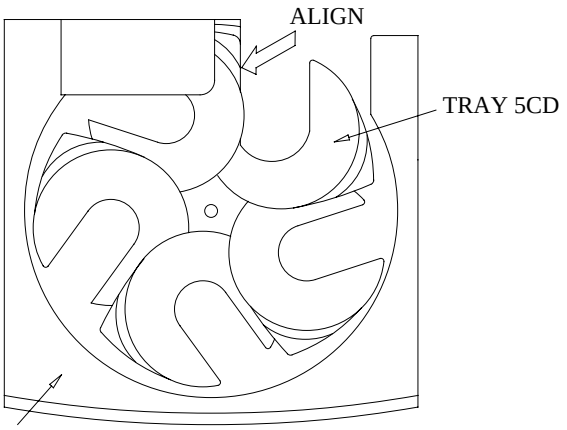


Fig-8

ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

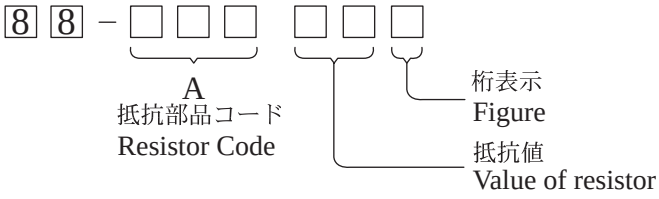
REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC			
	87-A21-381-040		C-IC,LA9235M
	87-A21-591-010		C-IC,LC78641NE-D
	87-001-982-010		IC,TA7291S
	87-A21-513-040		C-IC,BA6998FP
TRANSISTOR			
	87-026-609-080		TR,KTA1266GR
	87-A30-076-080		C-TR,2SC3052F
	87-A30-318-080		TR,CSA952K
	89-421-722-380		TR,2SD2172V/W
	89-320-011-080		TR,2SC2001 (15W)
	87-026-223-080		TR,DTC143TK
	87-A30-031-010		P-TR,PT380F
	87-026-608-080		C-TR,DTC 123 JK<ZRDM>
	87-A30-075-080		C-TR,2SA1235F
DIODE			
	87-A40-003-080		ZENER,MTZJ4.3A
	87-A40-509-080		ZENER,MTZJ6.8C
	87-A40-313-080		C-DIODE,MC 2840
	87-020-465-080		DIODE,1SS133 (110MA)
5CD C.B			
C1	87-010-374-080		CAP, ELECT 47-10V
C2	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C2	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C3	87-010-553-080		CAP,E 47-16
C4	87-010-260-080		CAP, ELECT 47-25V
C5	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C5	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C6	87-010-405-080		CAP, ELECT 10-50V
C7	87-010-263-080		CAP, ELECT 100-10V
C8	87-010-178-020		C-CAP,S 1000-50 B<ZRNDM,YZRNDM>
C8	87-010-178-080		CHIP CAP 1000P<YZRNDCM,ZRDM>
C10	87-010-069-080		CAP,E 0.33-50 5L
C11	87-010-071-080		CAP, ELECT 1-50 M 5L SRE
C13	87-010-321-020		C-CAP,S 82P-50 CH<ZRNDM,YZRNDM>
C13	87-010-321-080		CHIP CAPACITOR,82P(J) <YZRNDCM,ZRDM>
C15	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C15	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C16	87-010-553-080		CAP,E 47-16
C65	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C65	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C75	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C75	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C101	87-010-194-080		CAP, CHIP 0.047
C102	87-010-071-080		CAP, ELECT 1-50 M 5L SRE
C103	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C103	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C104	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C104	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C105	87-010-260-080		CAP, ELECT 47-25V
C106	87-010-322-020		C-CAP,S 100P-50 CH<ZRNDM,YZRNDM>
C106	87-010-322-080		C-CAP,S 100P-50 CH<YZRNDCM,ZRDM>
C107	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C107	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C109	87-010-194-080		CAP, CHIP 0.047
C110	87-010-322-020		C-CAP,S 100P-50 CH<ZRNDM,YZRNDM>
C110	87-010-322-080		C-CAP,S 100P-50 CH<YZRNDCM,ZRDM>
C111	87-010-260-080		CAP, ELECT 47-25V
C112	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C112	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C114	87-010-553-080		CAP,E 47-16
C115	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C115	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C116	87-010-260-080		CAP, ELECT 47-25V
C117	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C117	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C118	87-010-264-080		CAP,E 100-10 5L
C119	87-015-819-080		CAPACITOR,0.01
C120	87-010-312-020		C-CAP,S 15P-50 J CH<ZRNDM,YZRNDM>
C120	87-010-312-080		C-CAP,S 15P-50 CH<YZRNDCM,ZRDM>
C121	87-010-312-020		C-CAP,S 15P-50 J CH<ZRNDM,YZRNDM>
C121	87-010-312-080		C-CAP,S 15P-50 CH<YZRNDCM,ZRDM>
C123	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C123	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C124	87-010-071-080		CAP, ELECT 1-50 M 5L SRE
C126	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C126	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C130	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C130	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C132	87-010-405-080		CAP, ELECT 10-50V
C133	87-010-314-020		C-CAP,S 22P-50 CH<ZRNDM,YZRNDM>
C133	87-010-314-080		C-CAP,S 22P-50V<YZRNDCM,ZRDM>
C140	87-010-322-020		C-CAP,S 100P-50 CH<ZRNDM,YZRNDM>
C140	87-010-322-080		C-CAP,S 100P-50 CH<YZRNDCM,ZRDM>
C151	87-010-405-080		CAP, ELECT 10-50V
C152	87-010-415-080		CAP ELE SRE 10-50V
C201	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C201	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C202	87-010-382-080		CAP, ELECT 22-25V
C203	87-010-318-020		C-CAP,S 47P-50 CH<ZRNDM,YZRNDM>
C203	87-010-318-080		C-CAP,S 47P-50 CH<YZRNDCM,ZRDM>
C204	87-010-318-020		C-CAP,S 47P-50 CH<ZRNDM,YZRNDM>
C204	87-010-318-080		C-CAP,S 47P-50 CH<YZRNDCM,ZRDM>
C205	87-010-178-020		C-CAP,S 1000-50 B<ZRNDM,YZRNDM>
C205	87-010-178-080		CHIP CAP 1000P<YZRNDCM,ZRDM>
C206	87-010-322-020		C-CAP,S 100P-50 CH<ZRNDM,YZRNDM>
C206	87-010-322-080		C-CAP,S 100P-50 CH<YZRNDCM,ZRDM>
C207	87-012-156-020		C-CAP,S 220P-50 CH<ZRNDM,YZRNDM>
C207	87-012-156-080		C-CAP,S 220P-50 CH<YZRNDCM,ZRDM>
C211	87-010-260-080		CAP, ELECT 47-25V
C220	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C220	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C230	87-010-178-020		C-CAP,S 1000-50 B<ZRNDM,YZRNDM>
C230	87-010-178-080		CHIP CAP 1000P<YZRNDCM,ZRDM>
C351	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C351	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C352	87-016-251-040		CAP,E 220-16 SMG
C353	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C353	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C361	87-010-403-080		CAP, ELECT 3.3-50V
C362	87-010-403-080		CAP, ELECT 3.3-50V
C501	87-016-459-040		CAP,E 470-10 SMG
C502	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C502	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C503	87-010-263-080		CAP, ELECT 100-10V
C504	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C504	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C505	87-010-197-020		C-CAP,S 0.01-25 B<ZRNDM,YZRNDM>
C505	87-010-197-080		CAP, CHIP 0.01 DM<YZRNDCM,ZRDM>
C506	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C506	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C507	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C507	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C508	87-010-073-080		CAP,E 3.3-50 5L
C509	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C509	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C510	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C510	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C511	87-016-459-040		CAP,E 470-10 SMG
C520	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C520	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
C901	87-010-260-040		CAP,E 47-25 SME
C902	87-010-196-020		C-CAP,S 0.1-25 Z F GRM <ZRNDM,YZRNDM>
C902	87-010-196-080		CHIP CAPACITOR,0.1-25 <YZRNDCM,ZRDM>
CN1	87-A60-424-010		CONN,16P V TOC-B
CN202	87-A60-154-010		CONN,6P H FE
CN231	87-A60-162-010		CONN,14P H FE
CON2	87-A60-623-010		CONN,6P V 2MM JMT
CON3	87-A60-133-010		CONN,8P V FE
L501	87-003-102-080		COIL, 10UH
LED901	87-A40-558-010		LED,SLZ-8128A-01-A
M601	87-045-305-010		MOTOR, RF-500TB DC-5V (2MA)
⚠PR201	87-026-689-080		PROTECTOR,1A 60V 491
⚠PR350	87-A90-246-080		PROTECTOR,0.25A 60 4
S353	87-036-109-010		PUSH SWITCH
SW351	87-036-109-010		PUSH SWITCH
SW352	87-036-109-010		PUSH SWITCH
X101	87-030-270-080		VIB,XTAL 16.9344MHZ
LED C.B<ZRDM>			
LED701	87-017-733-080		LED,SEL1250SM<ZRDM>
LED702	87-017-350-080		LED,SEL1550CM<ZRDM>
LED703	87-017-733-080		LED,SEL1250SM<ZRDM>
T-T C.B			
C411	87-A11-148-080		CAP,TC U 0.1-50 Z F
CON8	87-A60-156-010		CONN,8P H FE
LED411	87-070-288-010		LED,GL380
M401	87-A90-036-010		MOT ASSY,RF-300CA-11
PS401	87-A90-156-010		SNSR,SG-240
S401	87-036-109-010		PUSH SWITCH
CD MOTOR C.B			
M20	87-045-358-010		MOT,RF-310TA 43
M21	87-045-356-010		MOT,RF-310TA 30
PIN3	87-A60-670-010		CONN,6P H 2MM JMT
SW1	87-A90-042-010		SW,LEAF MSW-17310MVP0

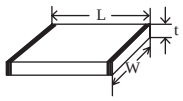
- Regarding connectors, they are not stocked as they are not the initial order items.
  The connectors are available after they are supplied from connector manufacturers upon the order is received.

○チップ抵抗部品コード／CHIP RESISTOR PART CODE

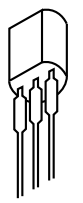
チップ抵抗部品コードの成り立ち
Chip Resistor Part Coding



チップ抵抗
Chip resistor

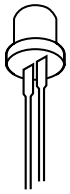
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm) 外形／Form	L	W	t	抵抗コード : A Resistor Code : A
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION

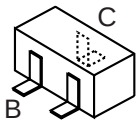


KTA1266

2SC2001
2SD2172



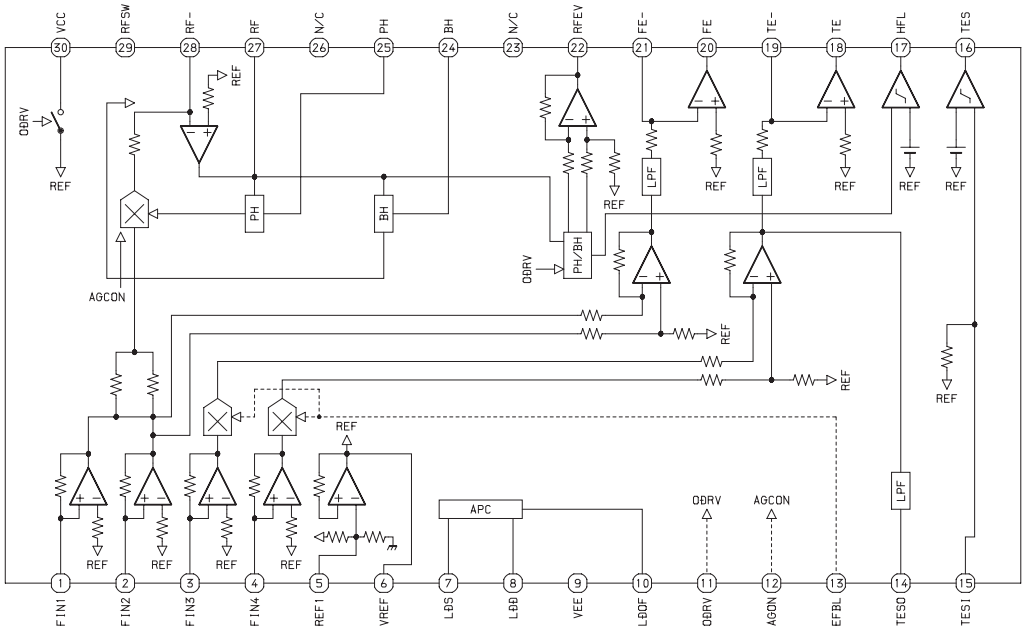
PT380F



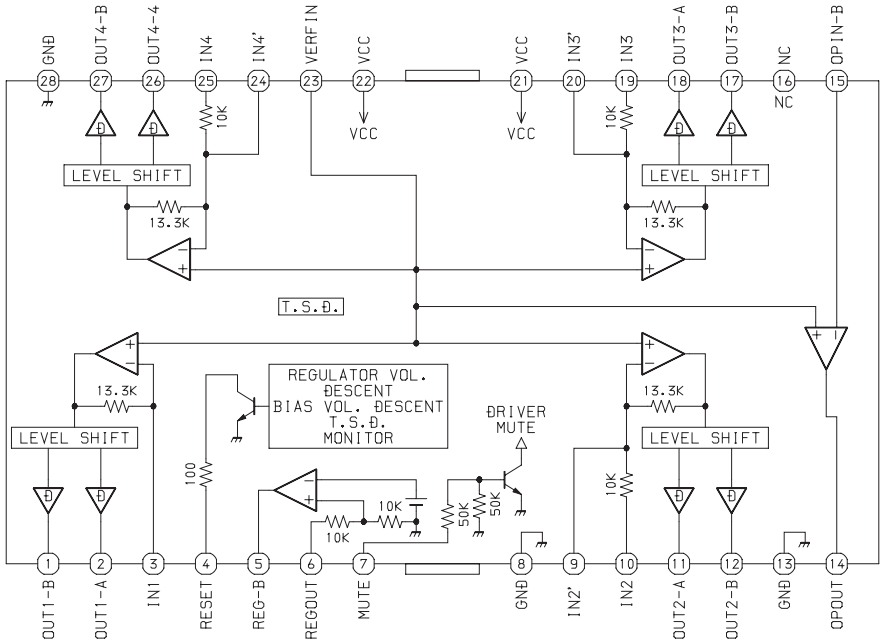
2SA1235
2SC3052
CSA952K
DTC123JK
DTC143TK

IC BLOCK DIAGRAM

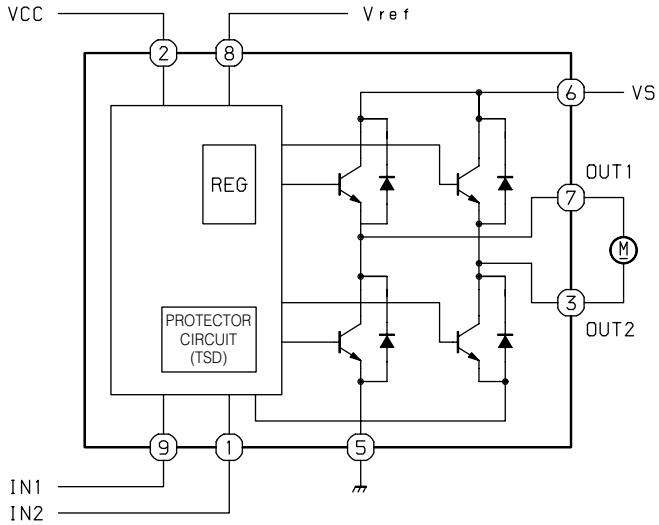
IC, LA9235M



IC, BA6998FP



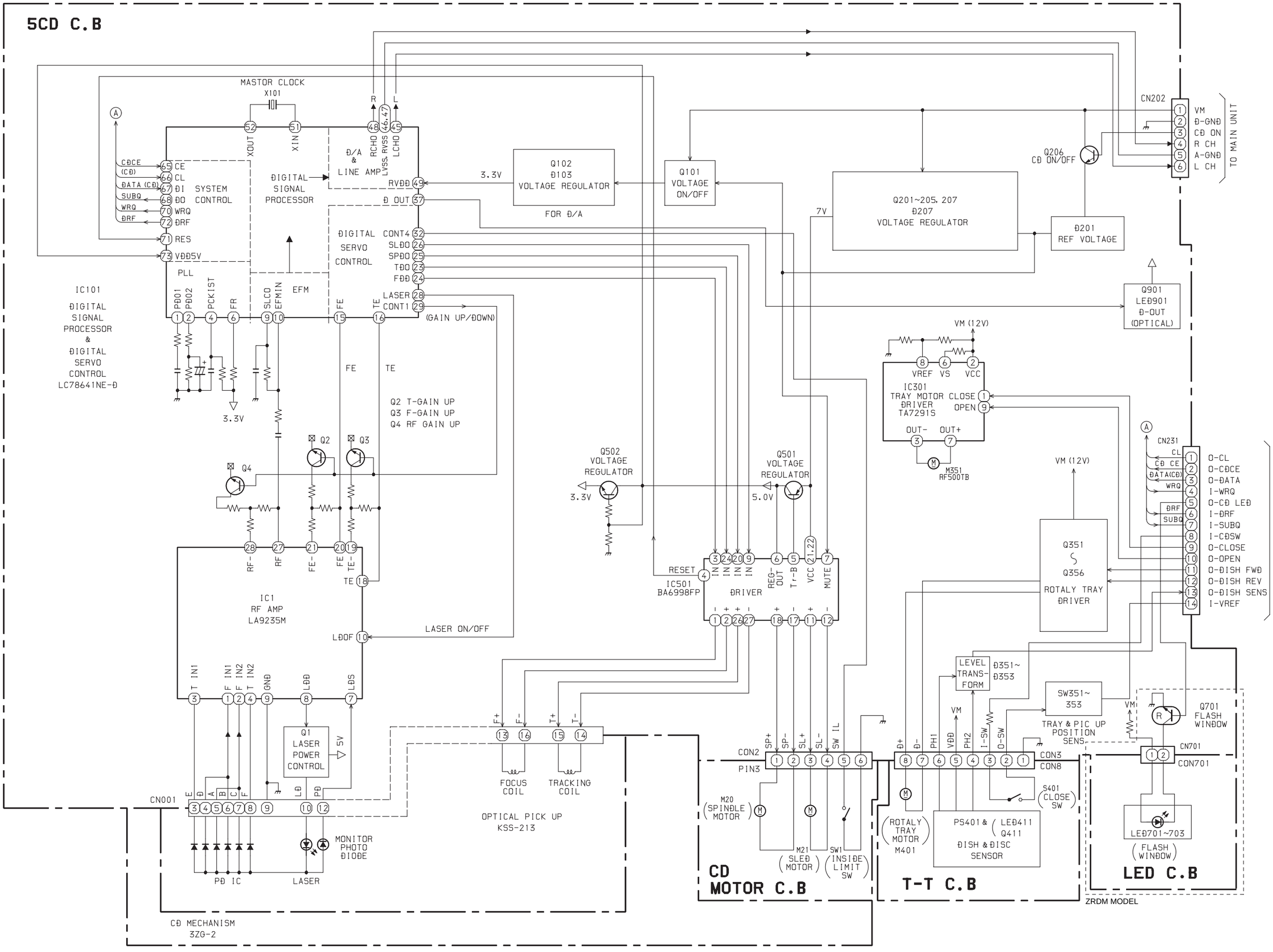
IC, TA7291S



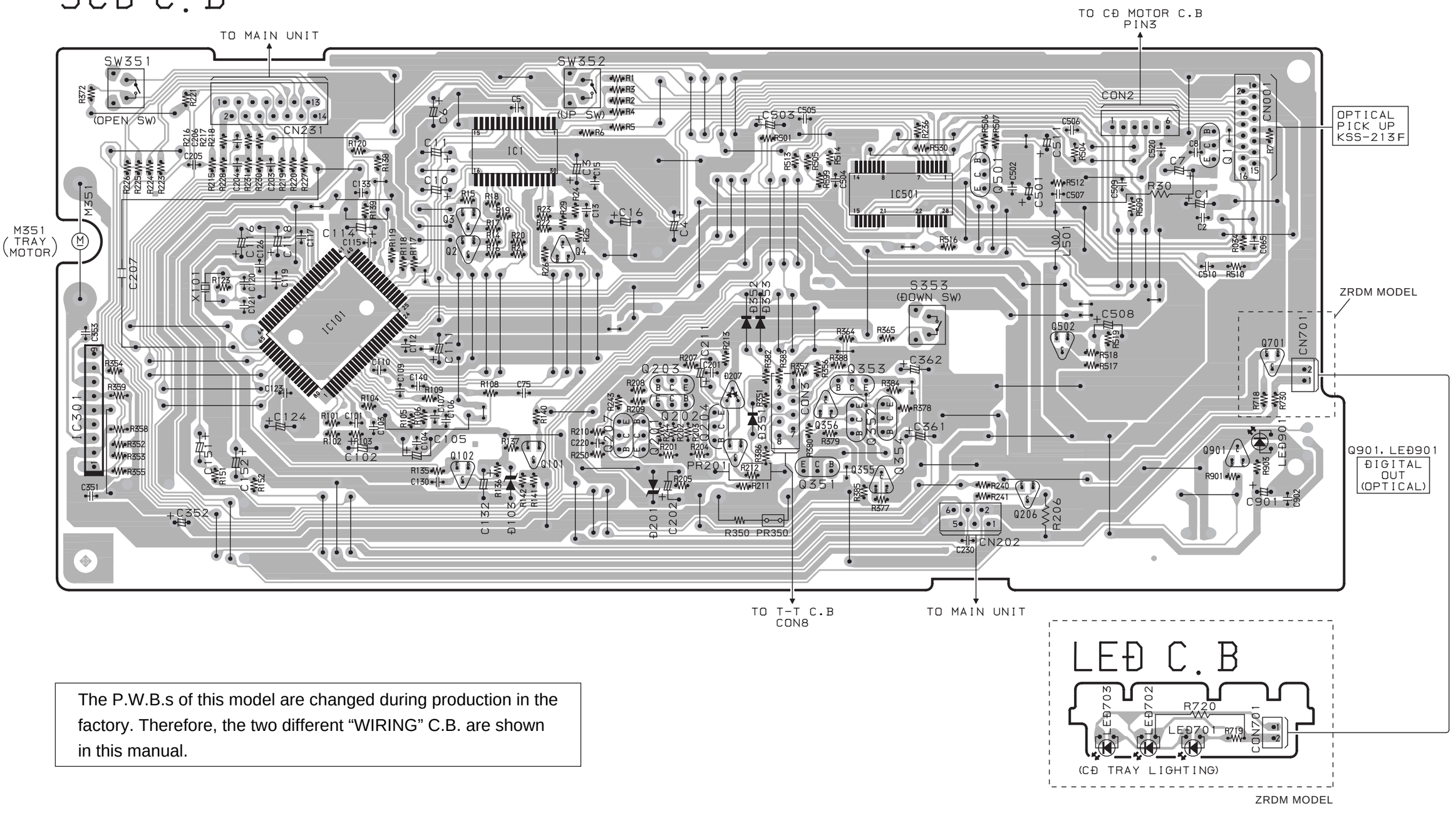
INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

∞ : HI IMPEDANCE

NOTE : INPUT "H" ACTIVE


5CD C.B
MASTOR CLOCK
X101
XOUT
XIN
Đ/A & LINE AMP
RCHO
LVSS, RVSS
LCHO
R
L
CN202
VM
Đ-GNĐ
CĐ ON
R CH
A-GNĐ
L CH
TO MAIN UNIT
Q206
CĐ ON/OFF
CĐCE
(CĐ)
ĐATA (CĐ)
SUBQ
WRQ
ĐRF
CE
CL
ĐI
ĐO
WRQ
ĐRF
SYSTEM CONTROL
RES
VĐĐ5V
ĐIGITAL SIGNAL PROCESSOR
RVĐĐ
Đ OUT
3.3V
Q102
Đ103
VOLTAGE REGULATOR
FOR Đ/A
Q101
VOLTAGE ON/OFF
7V
Q201~205, 207
Đ207
VOLTAGE REGULATOR
Đ201
REF VOLTAGE
ĐIGITAL SERVO CONTROL
CONT4
SLĐO
SPĐO
TĐO
FĐĐ
LASER
CONT1
(GAIN UP/ĐOWN)
Q901
LEĐ901
Đ-OUT
(OPTICAL)
IC101
ĐIGITAL SIGNAL PROCESSOR & ĐIGITAL SERVO CONTROL LC78641NE-Đ
PLL
EFM
PĐO1
PĐO2
PCK1ST
FR
SLCO
EFMIN
FE
TE
3.3V
FE
TE
Q2 T-GAIN UP
Q3 F-GAIN UP
Q4 RF GAIN UP
Q2
Q3
Q4
VM (12V)
VREF
VS
VCC
IC301
TRAY MOTOR ĐRIVER
TA7291S
CLOSE
OPEN
OUT-
OUT+
M351
RF500TB
CN231
CL
CĐ CE
ĐATA(CĐ)
WRQ
ĐRF
SUBQ
O-CL
O-CĐCE
O-ĐATA
I-WRQ
O-CĐ LEĐ
I-ĐRF
I-SUBQ
I-CĐSW
O-CLOSE
O-OPEN
O-ĐISH FWĐ
O-ĐISH REV
O-ĐISH SENS
I-VREF
Q502
VOLTAGE REGULATOR
3.3V
Q501
VOLTAGE REGULATOR
5.0V
VM (12V)
Q351
Q356
ROTALY TRAY ĐRIVER
RESET
IC501
BA6998FP
ĐRIVER
IN1
IN2
IN3
IN4
REG-OUT
Tr-B
VCC
MUTE
RF-
RF
FE-
FE
TE-
TE
IC1
RF AMP
LA9235M
LĐOF
LASER ON/OFF
T IN1
F IN1
F IN2
T IN2
GNĐ
LĐĐ
LĐS
Q1
LASER POWER CONTROL
5V
F+
F-
T+
T-
FOCUS COIL
TRACKING COIL
OPTICAL PICK UP
KSS-213
CN001
E
Đ
A
B
C
F
LĐ
PĐ
PĐ IC
LASER
MONITOR PHOTO ĐIOĐE
CĐ MECHANISM
3ZG-2
CON2
PIN3
SP+
SP-
SL+
SL-
SW IL
M20
SPINĐLE MOTOR
M21
SLEĐ MOTOR
SW1
INSIĐE LIMIT SW
CD MOTOR C.B
Đ+
Đ-
PH1
VĐĐ
PH2
I-SW
O-SW
CON3
CON8
LEVEL TRANS-FORM
Đ351~ Đ353
SW351~ 353
TRAY & PIC UP POSITION SENS
S401
CLOSE SW
ROTALY TRAY MOTOR
M401
PS401 & ĐISH & ĐISC SENSOR
LEĐ411
Q411
T-T C.B
VM
Q701
FLASH WINĐOW
CN701
CON701
LEĐ701~703
(FLASH WINĐOW)
LED C.B
ZRDM MODEL

5CD C.B



The P.W.B.s of this model are changed during production in the factory. Therefore, the two different “WIRING” C.B. are shown in this manual.

5CĐ C.B

TO MAIN UNIT

TO CĐ MOTOR C.B
PIN3

SW351
(OPEN SW)

SW352
(UP SW)

CN231

CON2

CN001

OPTICAL
PICK UP
KSS-213F

M351

M351
TRAY
(MOTOR)

IC1

IC101

IC501

X101

S353
(ĐOWN SW)

ZRDM MODEL

CN701

Q901, LEĐ901
ĐIGITAL
OUT
(OPTICAL)

IC301

Q203

Q202

Q201

Q207

Q204

Q353

Q356

Q354

Q355

Q351

Q502

Q501

Q701

Q901

Q102

Q101

Q206

CON3

CN202

FB201

FB202

FB203

FB902

FB901

PR201

PR350

R350

C352

C230

TO T-T C.B
CON8

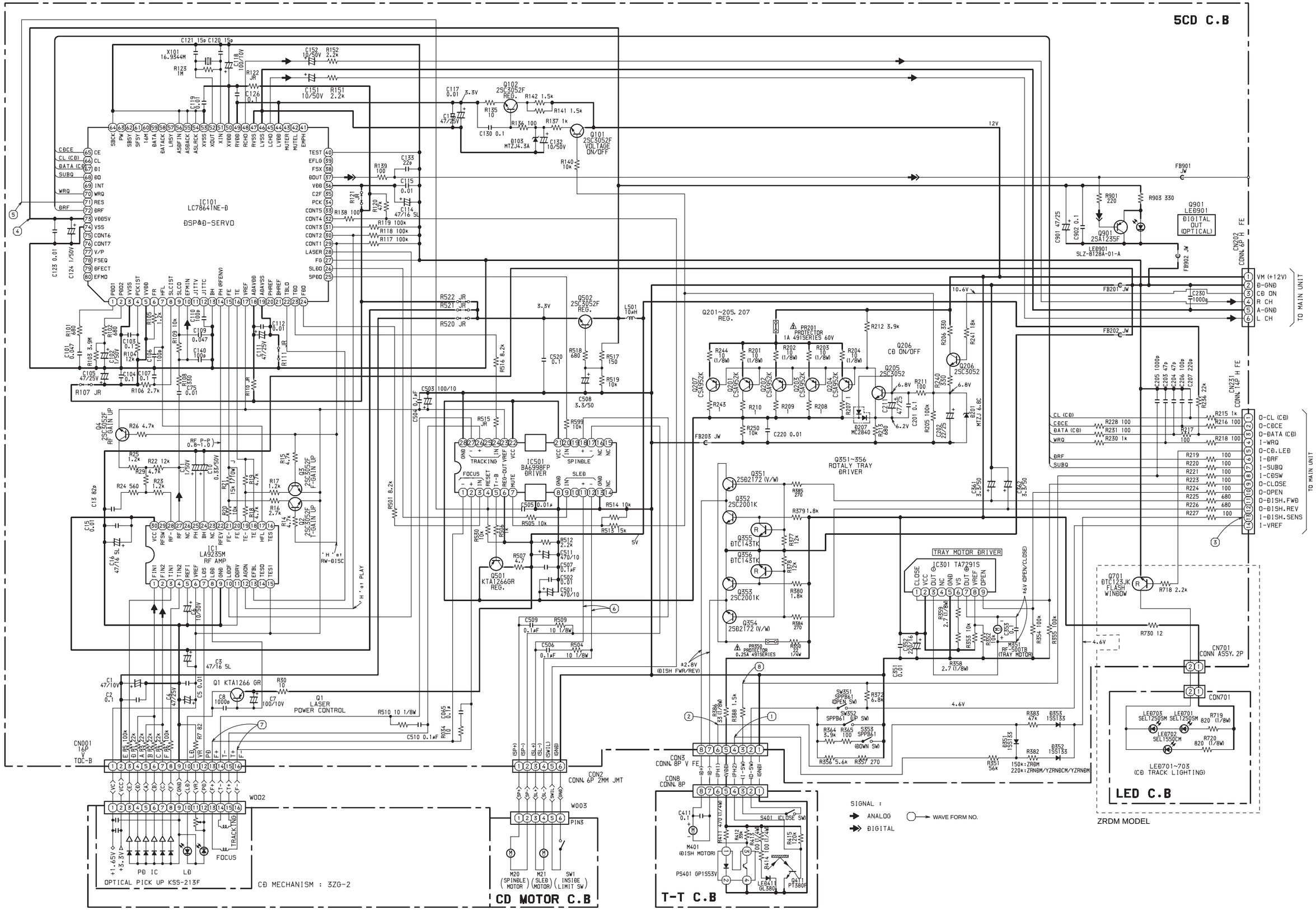
TO MAIN UNIT

The P.W.B.s of this model are changed during production in the factory. Therefore, the two different “WIRING” C.B. are shown in this manual.

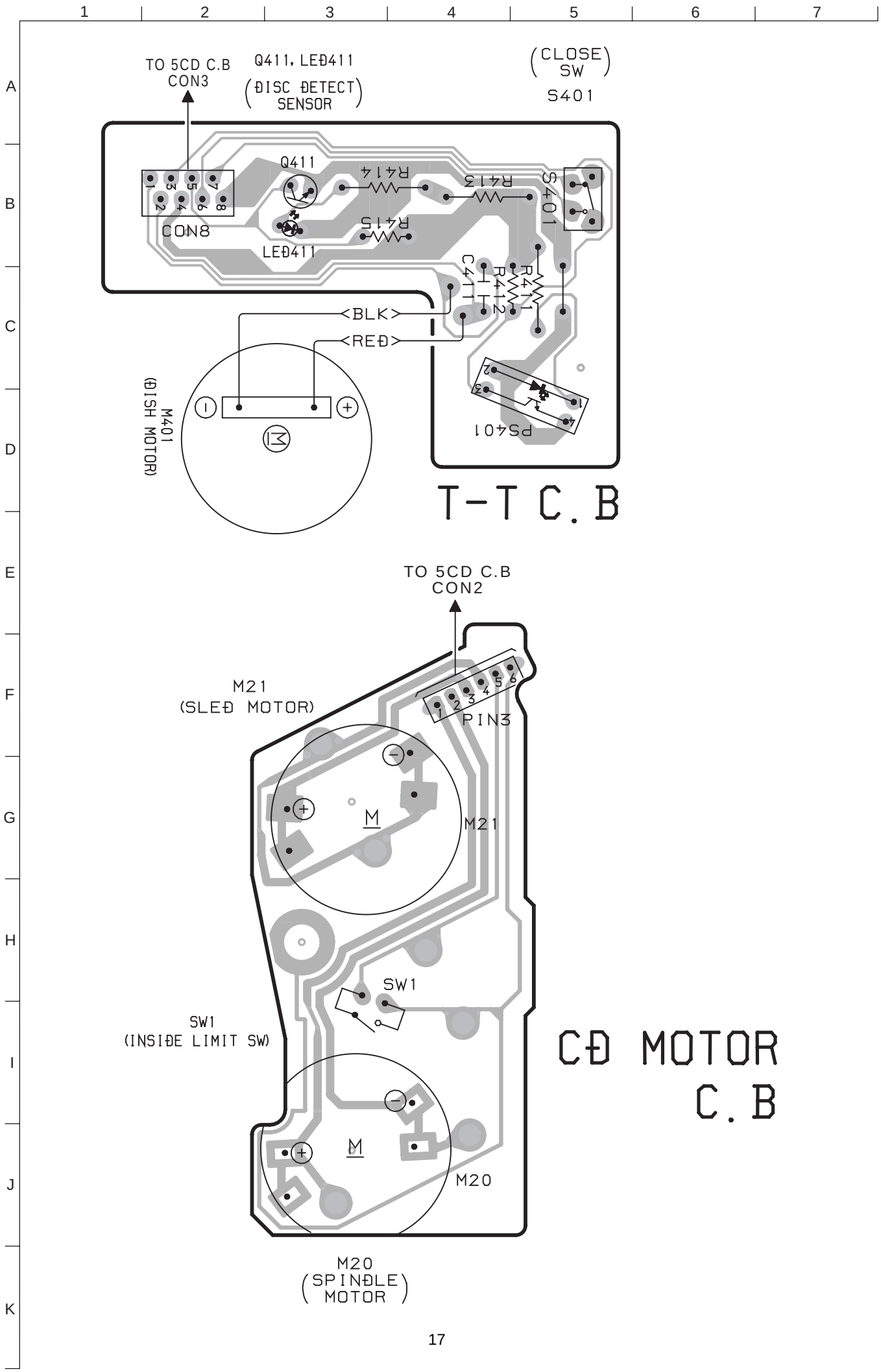
LEĐ C.B

LEĐ703
LEĐ702
LEĐ701
R720
R719
CN701
(CĐ TRAY LIGHTING)

ZRDM MODEL


5CD C.B
IC101
LC78641NE-Ð
ÐSP&Ð-SERVO
IC LA9235M
RF AMP
RF-DISC
H : at PLAY
OPTICAL PICK UP KSS-213F
CÐ MECHANISM : 3ZG-2
PÐ IC
LÐ
TRACKING
FOCUS
IC501
BA6998FP
ÐRIVER
SPINDLE
SLED
TRACKING
FOCUS
M20
(SPINDLE)
MOTOR
M21
(SLED)
MOTOR
SW1
INSIDE
LIMIT SW
CD MOTOR C.B
Q1
LASER
POWER CONTROL
Q1 KTA1266 GR
Q501
KTA1266GR
REG.
Q502
2SC3052F
REG.
Q101
2SC3052F
VOLTAGE
ON/OFF
Q102
2SC3052F
REG.
Q201~205, 207
REG.
Q206
CÐ ON/OFF
Q205
2SC3052
Q206
2SC3052
Q207
CSA952K
Q201
CSA952K
Q202
CSA952K
Q203
CSA952K
Q204
CSA952K
PR201
PROTECTOR
1A 491SERIES 60V
Q351~356
ROTALY TRAY
ÐRIVER
Q351
2SD2172 (V/W)
Q352
2SC2001K
Q355
ÐTC143TK
Q356
ÐTC143TK
Q353
2SC2001K
Q354
2SD2172 (V/W)
PR350
PROTECTOR
0.25A 491SERIES
TRAY MOTOR ÐRIVER
IC301 TA7291S
M351
RF-500TB
(TRAY MOTOR)
Q901
LED901
ÐIGITAL
OUT
(OPTICAL)
Q901
2SA1235F
LED901
SLZ-B128A-01-A
Q701
ÐTC123JK
FLASH
WINDOW
LED701~703
(CÐ TRACK LIGHTING)
LED C.B
ZRDM MODEL
CN701
CONN ASSY. 2P
CON701
CN231
CONN 14P H FE
CN202
CONN 6P H FE
TO MAIN UNIT
VM (+12V)
Ð-GNÐ
CÐ ON
R CH
A-GNÐ
L CH
O-CL (CÐ)
O-CBCE
O-ÐATA (CÐ)
I-WRQ
O-CÐ.LEÐ
I-ÐRF
I-SUBQ
I-CÐSW
O-CLOSE
O-OPEN
O-ÐISH.FWÐ
O-ÐISH.REV
I-ÐISH.SENS
I-VREF
CON3
CONN 8P V FE
CON8
CONN 8P
CON2
CONN 6P 2MM JMT
CN001
16P
V
TOC-B
W002
W003
PIN3
T-T C.B
SIGNAL :
ANALOG
ÐIGITAL
WAVE FORM NO.
12V
10.6V
4.6V
3.3V
±2.8V
(ÐISH FWR/REV)
±6V (OPEN/CLOSE)
M401
(ÐISH MOTOR)
PS401 GP1S53V
LED411
GL380
Q411
PT380F

WIRING-2 (T-T/CD MOTOR)



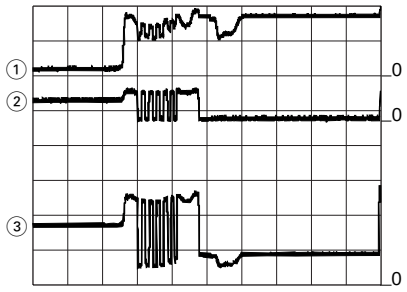
WAVE FORM

① CON3 Pin ④ (PH2) VOLT/DIV: 5V
TIME/DIV: 2S

② CON3 Pin ⑥ (PH1) VOLT/DIV: 10V
TIME/DIV: 2S

③ CN231 Pin ⑬ (I-DISH. SENS) VOLT/DIV: 2V
TIME/DIV: 2S

(NO DISC)

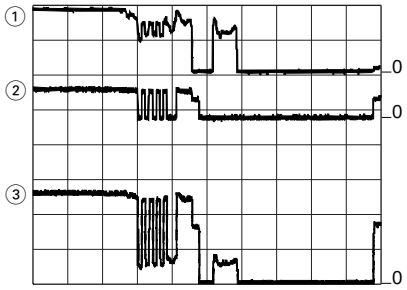


① CON3 Pin ④ (PH2) VOLT/DIV: 5V
TIME/DIV: 2S

② CON3 Pin ⑥ (PH1) VOLT/DIV: 10V
TIME/DIV: 2S

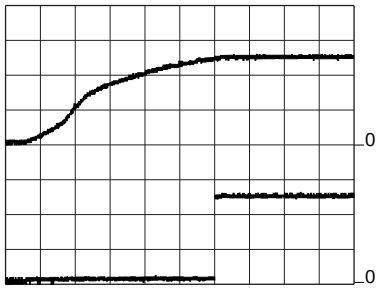
③ CN231 Pin ⑬ (I-DISH. SENS) VOLT/DIV: 2V
TIME/DIV: 2S

(YES DISC)

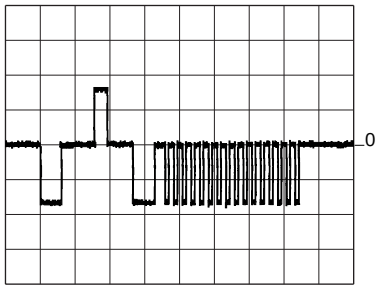


④ IC101 Pin ⑬ VDD5V VOLT/DIV: 2V
TIME/DIV: 5mS

⑤ IC101 Pin ⑪ RES VOLT/DIV: 2V
TIME/DIV: 5mS

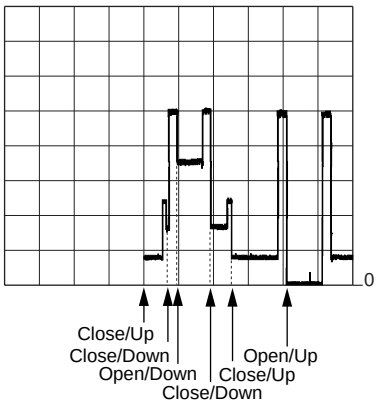


⑥ Between IC501 VOLT/DIV: 1V
Pin ⑪ (SLED+) and ⑫ (SLED–) TIME/DIV: 2S
(Shutter Close)



⑦ Between CN001 VOLT/DIV: 1V
Pin ⑬ (F+) and ⑯ (F–) TIME/DIV: 5S
(Focus Search)

⑧ R388 VOLT/DIV: 1V
TIME/DIV: 5S



TEST MODE

1. How to Activate CD Test Mode
   Insert the AC plug while pressing the CD function button.
   When activating the test mode, “TEST” appears on the screen then all indicators light (start mode).

2. How to Cancel the CD Test Mode
   Press the POWER button or disconnect the AC plug.
   * When pressing any other function key during playback, the test mode is released.

3. Functions and Applications of CD Test Mode

Mode/No.	Operation key	Display	Operation	Check contents
Start mode No.1		All lamps light	• All FLs light	• FL check • Microprocessor check
Search mode No.2	STOP key	CD	• Laser diode always turns ON • Focus search continuos operation *1 • Spindle motor continuos kick	• APC circuit check • Laser current measurement • Focus search waveform check • Focus error waveform check (DPR is ignored during search mode.)
Play mode No.3	PLAY key	Normal	• Normal playback • Focus search is continued if TOC cannot be read.	• Each servo circuit check • DPR check
Traverse mode No.4	PAUSE key	Normal	• Tracking servo OFF/ON Repeats OFF and ON every time the PAUSE key is pressed.	• Tracking balance check
Sled mode No.5	FF key	CD TEST	• Pickup moves to the innermost track *2 The lens is kicked to the innermost track simultaneously.	• Sled circuit check • Tracking circuit check • Mechanism operation check • PU check
	RWD key	CD TEST	• Pickup moves to the outermost track *2 The lens is kicked to the outermost track simultaneously.	
Spindle mode No.6	TAPE REC key	All lamps light	• The spindle motor is rotated forward (rough speed) by pressing the key. It is rotated reverse by pressing the key again. It is stopped by another pressing of the button.	• Spindle circuit check • Spindle motor check
RF AGC mode No.7	TUNER key	AGC ON/OFF	• Repeats ON and OFF every time the TUNER key is pressed. • To return to the start mode display, press the CD key three times.	• PC good or no good check • RF AMP circuit check

*1 ..... There are cases when the focus search cannot be operated owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases turn off the power, wait for a while, then re-start the machine.

*2 ..... To avoid damage to the gears, do not keep pressing the FF or RWD key when the pickup is at the outermost or innermost track, because the sled motor keeps running while the FF or RWD key is pressed when the pick-up is at the outermost or innermost track.

4. Adjustment Result Display of Auto Adjustment Items
The auto adjustment values of the focus and the tracking can be displayed on the screen.

4-1. Auto Adjustment Result Display of Focus Offset Cancel/Gain

1) Set the start mode (all lamps light).
2) Press the TAPE key until “F***” appears. Select ON or OFF of the adjustment items. (Refer to the table below.)
3) Press the PLAY key to play back the CD.
4) Press the CD key.
5) The auto adjustment value “F******” appears on the display. (Refer to the table below.)
6) After checking, press the CD key twice to return to the play mode (normal display).

Adjustment item (ON = 1, OFF = 0)				Auto adjustment value display (* is hexadecimal.)			
F	OFFSET	BIAS	GAIN	F	OFFSET	BIAS	GAIN
F	0	0	0	F	No display	No display	No display
F	1	1	1	F	**	**	**
F	1	1	0	F	**	**	No display
F	1	0	1	F	**	No display	**
F	1	0	0	F	**	No display	No display
F	0	1	1	F	No display	**	**
F	0	1	0	F	No display	**	No display
F	0	0	1	F	No display	No display	**

∗ When nothing is displayed (No display), a blank equal to two characters is created on the display.

4-2. Auto Adjustment Result Display of Tracking Offset Cancel/Balance/Gain

1) Set the start mode (all lamps light).
2) Keep pressing the AUX key until “T***” appears. Select ON or OFF for each adjustment item. (Refer to the table below.)
3) Press the PLAY key to play back the CD.
4) Press the CD key twice.
5) The auto adjustment value “T******” appears on the display. (Refer to the table below.)
6) After checking, press the CD key once to return to the play mode (normal display).

Adjustment item (ON = 1, OFF = 0)				Auto adjustment value display (* is hexadecimal.)			
T	OFFSET	BALANCE	GAIN	F	OFFSET	BALANCE	GAIN
T	0	0	0	T	No display	No display	No display
T	1	1	1	T	**	**	**
T	1	1	0	T	**	**	No display
T	1	0	1	T	**	No display	**
T	1	0	0	T	**	No display	No display
T	0	1	1	T	No display	**	**
T	0	1	0	T	No display	**	No display
T	0	0	1	T	No display	No display	**

∗ When nothing is displayed (No display), a blank equal to two characters is created on the display.

IC DESCRIPTION

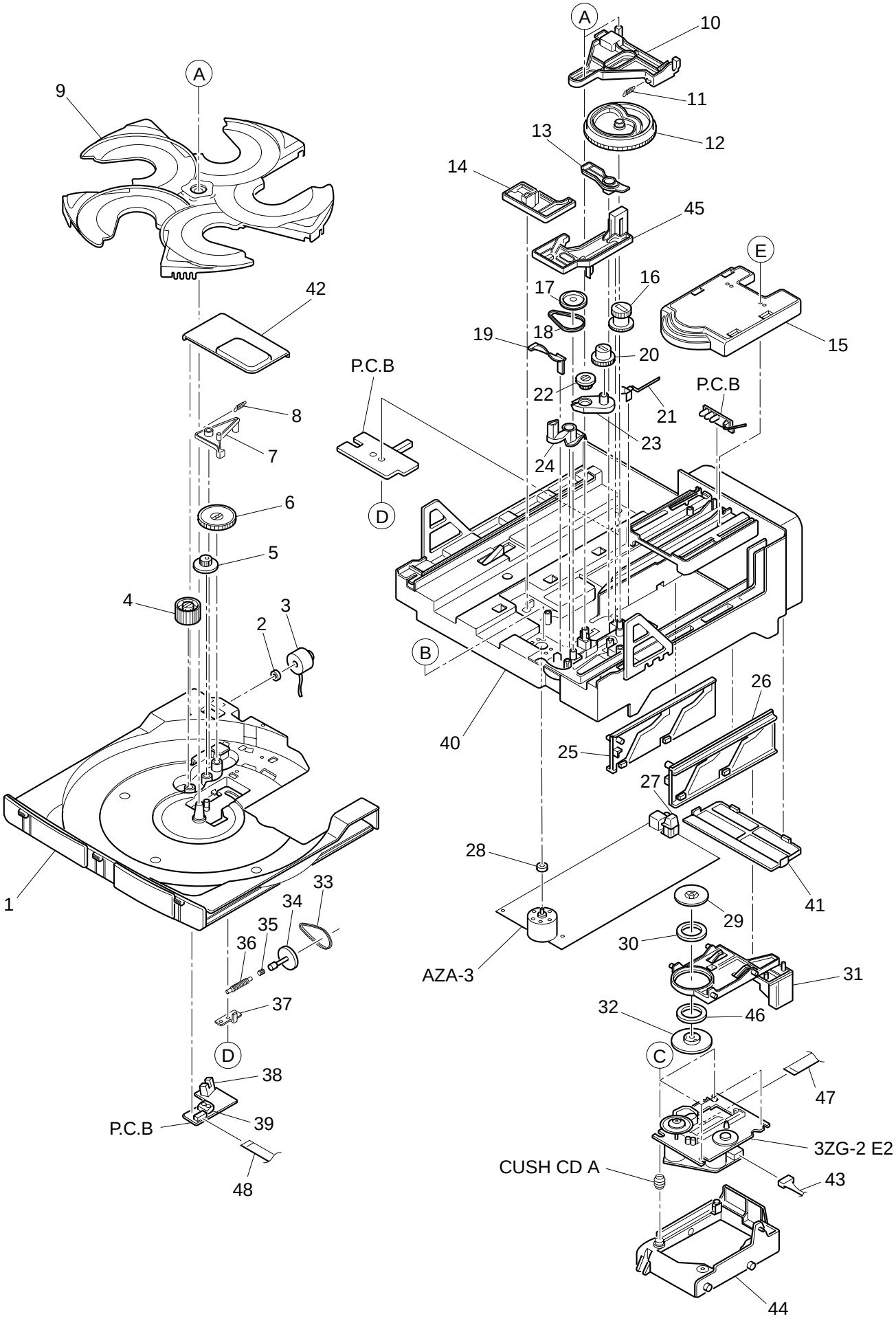
IC, LC78641NE-D

Pin No.	Pin Name	I/O	Description
1	PDO1	O	Internal VCO control phase comparator output pin. (Pull down)
2	PDO2	O	Internal VCO control phase comparator output pin. OFF for rough servo, ON for phase servo. (Pull down)
3	VVSS	—	Internal VCO ground pin.
4	PCKIST	—	PDO output current adjustment resistor connection pin.
5	VVDD	—	Internal VCO power supply pin.
6	FR	—	VCO frequency range adjustment resistor connection pin. (Pull up)
7	HFL	I	Mirror detection signal input pin.
8	SLCIST	—	SLCO output current adjustment resistor connection pin.
9	SLCO	O	Control output.
10	EFMIN	I	EFM signal input pin.
11	JITTV	O	Jitter detection monitor pin. (Not connected)
12	JITTC	O	Jitter detection adjustment pin. (Pull down)
13	BH	I	BH signal input pin. (Connected to GND)
14	PH (RFENV)	I	PH signal or RFENV signal input pin.
15	FE	I	FE signal input pin.
16	TE	I	TE signal input pin.
17	VREF	I	VREF input pin.
18	ADAVDD	—	Servo A/D, D/A power supply pin.
19	ADAVSS	—	Servo A/D, D/A ground pin.
20	PHREF	O	PH reference output pin. (Not connected)
21	BHREF	O	BH reference output pin. (Not connected)
22	TBLO	O	Tracking balance output pin.
23	TDO	O	Tracking control output pin.
24	FDO	O	Focus control output pin.
25	SPDO	O	Spindle control output pin.
26	SLDO	O	Thread control output pin.
27	DVREF/FG	I/O	Output driver VREF output pin. FG signal input pin. (Connected to GND)
28	LASER	O	Laser ON/OFF control pin.
29	CONT1	I/O	General-purpose input/output pin 1. (Connected to GND)
30	CONT2	I/O	General-purpose input/output pin 2. (Connected to GND)
31	CONT3	I/O	General-purpose input/output pin 3. (Connected to GND)
32	CONT4	I/O	General-purpose input/output pin 4.
33	CONT5	I/O	General-purpose input/output pin 5. (Not connected)
34	PCK	O	EFM data playback clock monitor pin. Average 4.3218MHz when the phase is locked. (Not connected)
35	C2F	O	C2 flag output pin. (Not connected)
36	VDD	—	Digital power supply pin.
37	DOUT	O	Digital out output pin. (EIAJ format)
38	FSX	O	Output pin for the 7.35kHz synchronization signal divided from the crystal oscillator. (Not connected)

Pin No.	Pin Name	I/O	Description
39	EFLG	O	C1, C2 error correction monitor pin. (Not connected)
40	TEST	I	Test input pin. (Connected to GND)
41	EMPH	I/O	Emphasis pin. Which becomes an input pin after reset and can be controlled externally. This becomes an emphasis monitor pin under control by command. (Not connected)
42	MUTEL	O	L channel mute output pin. (Not connected)
43	MUTER	O	R channel mute output pin. (Not connected)
44	LVDD	—	L channel power supply pin.
45	LCHO	O	L channel output pin.
46	LVSS	—	L channel ground pin.
47	RVSS	—	R channel ground pin.
48	RCHO	O	R channel output pin.
49	RVDD	—	R channel power supply pin.
50	XVDD	—	Crystal oscillator power supply pin.
51	XIN	I	Connections for a 16.9344MHz crystal oscillator pin.
52	XOUT	O	
53	XVSS	—	Crystal oscillator ground pin.
54	ASLRCK	I	L/R clock input pin. (Connected to GND)
55	ASDACK	I	Bit clock input pin. (Connected to GND)
56	ASDFIN	I	L/R channel data input pin. (Connected to GND)
57	LRSY	O	L/R clock output pin. (Not connected)
58	DATACK	O	Bit clock output pin. (Not connected)
59	DATA	O	L/R channel data output pin. (Not connected)
60	16M	O	16.9344MHz output pin. (Not connected)
61	SFSY	O	Subcode frame synchronization signal output pin. This signal falls when the subcode is in the standby state. (Not connected)
62	SBSY	O	Subcode clock synchronization signal output pin. (Not connected)
63	PW	O	Subcode P, Q, R, S, T, U and W output pin. (Not connected)
64	SBCK	I	Subcode readout clock input pin. (Connected to GND)
65	CE	I	Chip enable signal input pin.
66	CL	I	Data transfer clock input pin.
67	DI	I	Data input pin.
68	DO	O	Data output pin.
69	INT	O	Interruption signal output pin. (Not connected)
70	WRQ	O	Interruption signal output pin.
71	RES	I	Reset input pin. This pin must be set low briefly after power is first applied.
72	DRF	O	Focus ON detect pin.
73	VDD5V	—	Microprocessor interface power supply.
74	VSS	—	Digital ground pin.
75	CONT6	I/O	General-purpose input/output pin 6. (Not connected)
76	CONT7	I/O	General-purpose input/output pin 7. (Not connected)
77	V/P	O	Rough servo/phase control automatic switching monitor output pin. “H” for rough servo and “L” for phase servo. (Not connected)

Pin No.	Pin Name	I/O	Description
78	FSEQ	O	Synchronization signal detection output pin. Outputs a high level when the synchronization signal detected from the EFM signal and the internally generated synchronization signal agree. (Not connected)
79	DEFECT	I/O	Defect pin. Which becomes an input pin after reset and can be controlled externally. This becomes the defect monitor pin under control by command. (Not connected)
80	EFMO	O	EFM signal output pin. (Not connected)

MECHANICAL EXPLODED VIEW 1/1



MECHANICAL PARTS LIST 1/1

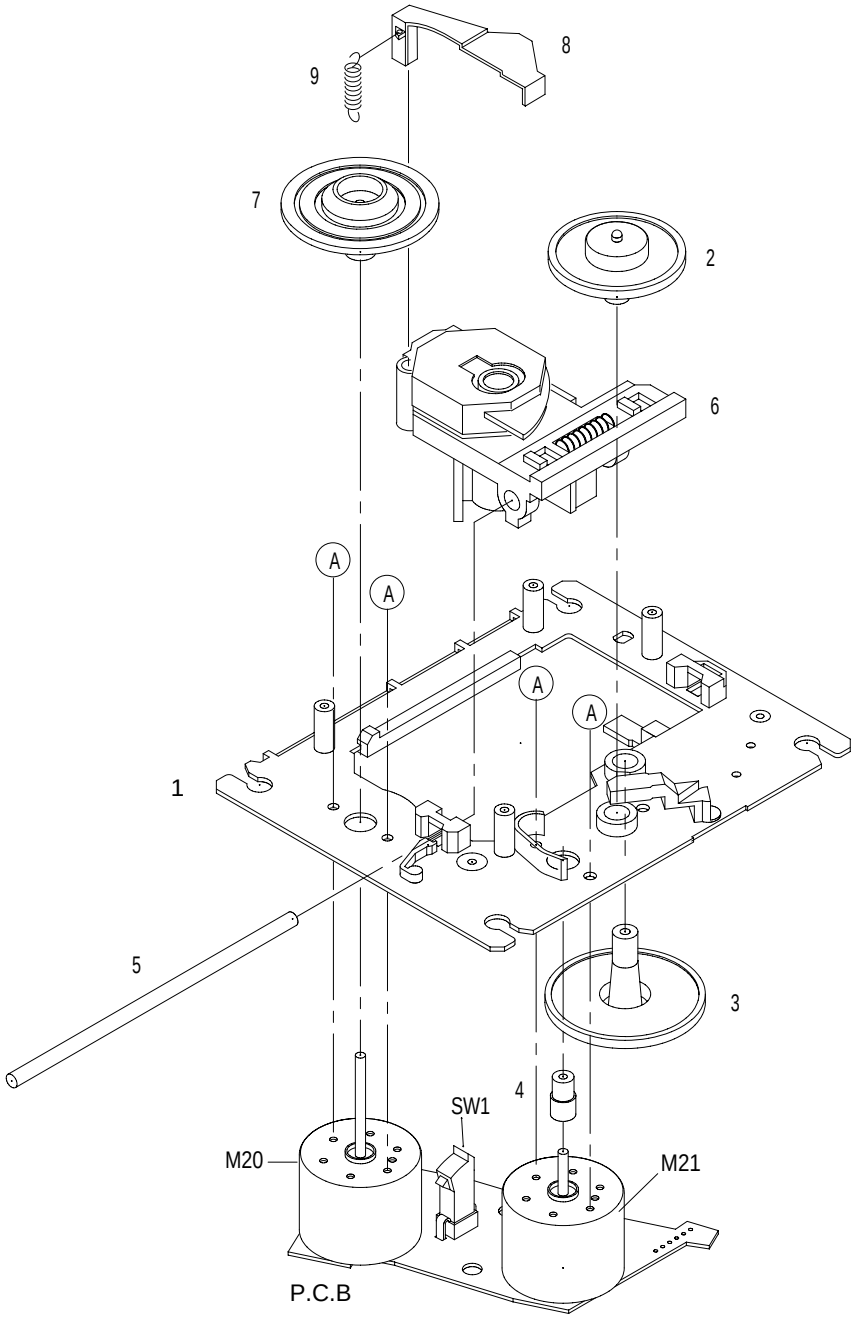
DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	86-ZG1-001-410		TRAY,5CD
2	84-ZG1-267-010		PULLEY,LOAD MO 8
3	87-A90-036-010		MOT ASSY,RF-300CA-11
4	86-ZG1-228-110		GEAR,TT-B
5	86-ZG1-227-110		GEAR,TT-A
6	86-ZG1-223-110		GEAR,WORM-WHEEL TT
7	86-ZG1-224-110		LEVER,TT(*)
8	86-ZG1-226-010		SPR-E,LEVER TT
9	86-ZG1-002-210		TURN TABLE,5CD
10	86-ZG1-211-210		JOINT,CAM
11	86-ZG1-216-010		SPR-E,JT
12	86-ZG1-203-210		GEAR,MAIN CAM
13	86-ZG1-213-110		LEVER,LOAD
14	86-ZG1-214-110		LEVER,PROTECT
15	86-ZG1-004-010		REFLECTOR,CD<ZRDM>
16	86-ZG1-205-110		GEAR,TRAY
17	84-ZG1-207-010		PULLEY,RELAY
18	84-ZG1-209-010		BELT,SQ1.8-117.7
19	86-ZG1-217-010		LEVER,SW
20	86-ZG1-206-110		GEAR,RELAY B
21	86-ZG1-220-110		SPR-P,LOCK
22	86-ZG1-204-110		GEAR,RELAY A
23	86-ZG1-218-110		PLATE,GEAR
24	86-ZG1-208-010		LEVER,TRAY
25	86-ZG1-209-110		SLIDER,CAM L(*)
26	86-ZG1-210-110		SLIDER,CAM R(*)
27	84-ZG1-244-310		CABI,OPTICAL
28	84-ZG2-228-010		PULLEY,MOT
29	86-ZG1-239-110		PLATE,DISC
30	83-ZG3-604-010		RING,MAG 2
31	86-ZG1-215-010		HLDR,CHUCK
32	86-ZG1-238-010		HLDR,MAGNET 6ZG N
33	86-ZG1-225-010		BELT,SQ1.2-32.9
34	86-ZG1-221-010		PULLEY,TT
35	86-ZG1-231-010		SPR-C,WORM
36	84-ZG1-256-010		GEAR,WORM N2
37	86-ZG1-232-010		SPR-P,WORM
38	86-ZG1-229-010		HLDR,SENSOR
39	86-ZG1-230-010		HLDR,DISC SENSOR
40	86-ZG1-201-310		CHAS,MECHA
41	86-ZG1-005-110		COVER,CHAS
42	86-ZG1-003-110		COVER,TRAY<ZRDM>
43	86-ZG1-609-010		CONN ASSY,6P<EXCEPT YZRNDCM>
44	86-ZG1-202-210		HLDR,MECHA
45	86-ZG1-212-410		SLIDER,LOAD
46	83-ZG3-211-010		PLATE,DISC
47	86-ZG1-605-010		CABLE,FFC 16P<EXCEPT YZRNDCM>
48	86-ZG1-667-010		F-CABLE,8P 1.25 175MM BLACK
A	87-078-148-010		VFT2+3-12(F10) BLK
B	87-251-072-410		U+2.6-5
C	81-ZG1-254-010		S-SCREW,MECH HLDR
D	87-067-579-010		TAPPING SCREW, BVT2+3-8
E	87-067-703-010		TAPPING SCREW, BVT2+3-10<ZRDM>

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

CD MECHANISM EXPLODED VIEW 1/1 (3ZG-2E2)



CD MECHANISM PARTS LIST 1/1 (3ZG-2E2)

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	83-ZG2-246-310		CHAS ASSY,SHT 5
2	83-ZG2-235-010		GEAR,A3
3	83-ZG2-205-210		GEAR,B
4	83-ZG2-236-010		GEAR,MOTOR 3
5	83-ZG2-253-110		SHAFT,SLIDE 5
6	87-A90-836-010		PICKUP,KSS-213F
7	83-ZG2-254-010		TURN TABLE,C5
8	83-ZG2-245-510		LEVER,SHUTTER(*)
9	83-ZG2-250-110		SPR-E,SHT 2
A	87-261-032-210		V+2-3

REFERENCE NAME LIST

ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	PTR, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, CERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER

MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL

アイワ株式会社 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)
AIWA CO.,LTD. 2–11, IKENOHATA 1–CHOME, TAITO-KU, TOKYO 110-8710, JAPAN TEL:03 (3827) 3111

0251431
Printed in Singapore